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To: Commissioner for Patents for **Examiner Syed J. Ali** **Group Art Unit 2195**	Facsimile No.: **571/273-8300**
From: Stephanie Fay for Michele Morrow Legal Assistant to Gerald Glanzman	No. of Pages Including Cover Sheet: **27**

Message:

Enclosed herewith:

- Transmittal of Appeal Brief; and
- Appeal Brief.

Re: Application No. **10/026,547**
Attorney Docket No: **2001-087-ICE**

Date: Wednesday, March 29, 2006

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Hostetter et al.**	§	Group Art Unit: **2195**
	§	
Serial No.: **10/026,547**	§	Examiner: **Ali, Syed J.**
	§	
Filed: **December 24, 2001**	§	Attorney Docket No.: **2001-087-1CE**
	§	
For: **Variable Synchronicity Between Duplicate Transactions**		

<u>Certificate of Transmission Under 37 C.F.R. § 1.8(a)</u>
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By: Stephanie Fay
Stephanie Fay

51344
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TRANSMITTAL OF APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:
ENCLOSED HEREWITH:

- Appeal Brief (37 C.F.R. 41.37)

A fee of $500.00 is required for filing an Appeal Brief. Please charge this fee to Storage Technology Corporation Deposit Account No. 19-4545. No additional fees are believed to be necessary. If, however, any additional fees are required, I authorize the Commissioner to charge these fees which may be required to Storage Technology Corporation Deposit Account No. 19-4545. No extension of time is believed to be necessary. If, however, an extension of time is required, the extension is requested, and I authorize the Commissioner to charge any fees for this extension to Storage Technology Corporation Deposit Account No. 19-4545.

Respectfully submitted,

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MAR 2 9 2006

Docket No. 2001-087-ICE

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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By: Stephanie Fay
Stephanie Fay

APPEAL BRIEF (37 C.F.R. 41.37)

This brief is in furtherance of the Notice of Appeal, filed in this case on January 30, 2006.

A fee of $500.00 is required for filing an Appeal Brief. Please charge this fee to Storage Technology Corporation Deposit Account No. 19-4545. No additional fees are believed to be necessary. If, however, any additional fees are required, I authorize the Commissioner to charge these fees which may be required to Storage Technology Corporation Deposit Account No. 19-4545. No extension of time is believed to be necessary. If, however, an extension of time is required, the extension is requested, and I authorize the Commissioner to charge any fees for this extension to Storage Technology Corporation Deposit Account No. 19-4545.

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REAL PARTY IN INTEREST

The real party in interest in this appeal is the following party: Storage Technology Corporation of Louisville, Colorado.

RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal, there are no such appeals or interferences.

STATUS OF CLAIMS

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 1-42

B. STATUS OF ALL THE CLAIMS IN APPLICATION

1. Claims canceled: None
2. Claims withdrawn from consideration but not canceled: None
3. Claims pending: 1-42
4. Claims allowed: None
5. Claims rejected: 1-42
6. Claims objected to: None

C. CLAIMS ON APPEAL

The claims on appeal are: 1-42

STATUS OF AMENDMENTS

Appellants filed a Response to the Final Office Action on December 19, 2005, which was allowed. The claims on appeal herein are as presented in the Response to the Final Office Action, filed on December 19, 2005.

SUMMARY OF CLAIMED SUBJECT MATTER

A. CLAIM 1 - INDEPENDENT

Claim 1 is directed to a method for synchronizing transactions. The method comprises specifying a particular level of lag (Specification, pg. 12, lines 15-21; pg. 13, lines 22-27; pg. 14, lines 8-9; pg. 15, lines 25-28; **Figure 5, 508; Figure 6, 604; Figure 7, 708**). The particular level of lag is a specified synchronicity setting (Specification, pg. 12, lines 15-21; pg. 13, lines 22-27; pg. 14, lines 8-9; pg. 15, lines 25-28; **Figure 5, 508; Figure 6, 604; Figure 7, 708**). A first computer executes a series of commands (Specification, pg. 12, lines 6-8; pg. 13, lines 22-23; pg. 14, lines 6-7; pg. 15, lines 9-14; **Figure 5, 503; Figure 6, 600; Figure 7, 701; Figure 8, 801** and **805**). The level of lag between two computers is controlled by relaying the series of commands to a second computer until the synchronicity setting is reached (Specification, pg. 12, lines 19-26; pg. 13, lines 24-27; pg. 14, line 18 through pg. 15, line 2; pg. 15, lines 25-28; **Figure 6, 606**). After the synchronicity setting is reached the first computer delays relaying additional commands to the second computer, so that the second computer lags behind the first computer by an amount of lag that is no greater than the specified synchronicity setting (Specification, pg. 12, lines 19-26; pg. 13, lines 24-27; pg. 14, line 18 through pg. 15, line 2; pg. 15, lines 25-28; **Figure 6, 606**).

A. CLAIM 15 - INDEPENDENT

Claim 15 is directed to a computer program product in a computer readable medium comprising functional descriptive data that, when executed by a computer, enables the computer to perform acts for synchronizing transactions. The acts include specifying a particular level of lag (Specification, pg. 12, lines 15-21; pg. 13, lines 22-27; pg. 14, lines 8-9; pg. 15, lines 25-28; **Figure 5, 508; Figure 6, 604; Figure 7, 708**). The particular level of lag is a specified synchronicity setting (Specification, pg. 12, lines 15-21; pg. 13, lines 22-27; pg. 14, lines 8-9; pg. 15, lines 25-28; **Figure 5, 508; Figure 6, 604; Figure 7, 708**). A first computer executes a series of commands (Specification, pg. 12, lines 6-8; pg. 13, lines 22-23; pg. 14, lines 6-7; pg.

15, lines 9-14; **Figure 5, 503; Figure 6, 600; Figure 7, 701; Figure 8, 801 and 805**). The level of lag between two computers is controlled by relaying the series of commands to a second computer until the synchronicity setting is reached (Specification, pg. 12, lines 19-26; pg. 13, lines 24-27; pg. 14, line 18 through pg. 15, line 2; pg. 15, lines 25-28; **Figure 6, 606**). After the synchronicity setting is reached the first computer delays relaying additional commands to the second computer, so that the second computer lags behind the first computer by an amount of lag that is no greater than the specified synchronicity setting (Specification, pg. 12, lines 19-26; pg. 13, lines 24-27; pg. 14, line 18 through pg. 15, line 2; pg. 15, lines 25-28; **Figure 6, 606**).

A. CLAIM 29 - INDEPENDENT

Claim 29 is directed to a computer program product in a computer readable medium comprising functional descriptive data that, when executed by a computer, enables the computer to perform acts for synchronizing transactions. The acts include specifying a particular level of lag (Specification, pg. 12, lines 15-21; pg. 13, lines 22-27; pg. 14, lines 8-9; pg. 15, lines 25-28; **Figure 5, 508; Figure 6, 604; Figure 7, 708**). The particular level of lag is a specified synchronicity setting (Specification, pg. 12, lines 15-21; pg. 13, lines 22-27; pg. 14, lines 8-9; pg. 15, lines 25-28; **Figure 5, 508; Figure 6, 604; Figure 7, 708**). Copying extents of data from a host to a first storage system pursuant to instructions from the host (Specification, pg. 12, lines 6-8; pg. 13, lines 22-23; pg. 14, lines 6-7; pg. 15, lines 9-14; **Figure 5, 503; Figure 6, 600; Figure 7, 701; Figure 8, 801 and 805**). The level of lag between storage systems is controlled by relaying the instructions to a second storage system until said synchronicity setting is reached (Specification, pg. 12, lines 19-26; pg. 13, lines 24-27; pg. 14, line 18 through pg. 15, line 2; pg. 15, lines 25-28; **Figure 6, 606**). After the synchronicity setting is reached the first storage system delays relaying additional commands to the second storage system, so that the second storage system lags behind the first storage system in copying the extents of data by an amount of lag that is no greater than the specified synchronicity setting (Specification, pg. 12, lines 19-26; pg. 13, lines 24-27; pg. 14, line 18 through pg. 15, line 2; pg. 15, lines 25-28; **Figure 6, 606**).

A. CLAIM 33 - INDEPENDENT

Claim 33 is directed to a data processing system. The data processing system (Specification pg. 7, line 11 – pg. 9, line 12; **Figure 2, 200**) is comprised of a processing unit that includes at least one processor (**Figure 2, 210-224**), a memory (**Figure 2, 208**), and a set of instructions within the memory. The processing unit executes the set of instructions to perform acts for synchronizing transactions. The acts include specifying a particular level of lag (Specification, pg. 12, lines 15-21; pg. 13, lines 22-27; pg. 14, lines 8-9; pg. 15, lines 25-28; **Figure 5, 508; Figure 6, 604; Figure 7, 708**). The particular level of lag is a specified synchronicity setting (Specification, pg. 12, lines 15-21; pg. 13, lines 22-27; pg. 14, lines 8-9; pg. 15, lines 25-28; **Figure 5, 508; Figure 6, 604; Figure 7, 708**). A first computer executes a series of commands (Specification, pg. 12, lines 6-8; pg. 13, lines 22-23; pg. 14, lines 6-7; pg. 15, lines 9-14; **Figure 5, 503; Figure 6, 600; Figure 7, 701; Figure 8, 801 and 805**). The level of lag between two computers is controlled by relaying the series of commands to a second computer until the synchronicity setting is reached (Specification, pg. 12, lines 19-26; pg. 13, lines 24-27; pg. 14, line 18 through pg. 15, line 2; pg. 15, lines 25-28; **Figure 6, 606**). After the synchronicity setting is reached the first computer delays relaying additional commands to the second computer, so that the second computer lags behind the first computer by an amount of lag that is no greater than the specified synchronicity setting (Specification, pg. 12, lines 19-26; pg. 13, lines 24-27; pg. 14, line 18 through pg. 15, line 2; pg. 15, lines 25-28; **Figure 6, 606**).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. GROUND OF REJECTION 1 (Claims 1-42)

Claims 1-42 stand rejected under 35 U.S.C. § 103(a) as obvious over **Sicola** et al., System for Data Replication Using Redundant Pairs of Storage Controllers, Fibre Channel Fabrics and Links Therebetween, U.S. Patent No. 6,601,187, July 29, 2003 (hereinafter "**Sicola**").

ARGUMENT

A. GROUND OF REJECTION 1 (Claims 1-42)

The Final Office Action rejects claims 1-42 under 35 U.S.C. § 103(a) as being unpatentable over **Sicola** et al., System for Data Replication Using Redundant Pairs of Storage Controllers, Fibre Channel Fabrics and Links Therebetween, U.S. Patent No. 6,601,187, July 29, 2003 (hereinafter "**Sicola**"). This rejection is respectfully traversed.

With regards to claim 1, the Final Office Action states:

> 7. As per claim 1, Sicola teaches the invention as claimed, including a method for synchronizing transactions, comprising:
>
> specifying a particular level of lag, said particular level of lag being a specified synchronicity setting (col. 11 lines 17-24; col. 12 lines 4-15);
>
> executing a series of commands at a first computing entity (col. 12 lines 17-25);
>
> controlling a level of lag between computing entities by relaying the series of commands to a second computing entity (col. 12 lines 47-56) until said synchronicity setting is reached (col. 11 lines 17-24); and
>
> wherein the second computing entity lags behind the first computing entity by an amount of lag that is no greater than said specified synchronicity setting (col. 11 lines 17-19).
>
> 8. Though Sicola does not specifically require postponing relaying additional commands after said synchronicity setting is reached, such is an obvious -modification of the asynchronous data replication method disclosed therein, particularly when viewed in relation to Sicola' s method of synchronous data replication. Sicola teaches that in a synchronous mode of operation, each input/output command that is entered at the host computer is replicated at a remote computer, and a subsequent command does not begin until the first command has been verified as complete (col. 11 line 43 - col. 12 line 3). However, certain constraints make this type of operation undesirable, as a system experiences downtime while waiting for the remote acknowledgement (col. 11 lines 35-42).
>
> In contrast, asynchronous operation allows a series of commands to be entered at a first computer before requiring acknowledgment of completion of the replication at the remote site. This results in a lag between the operations, but is assured of eventual synchronization over time (col. 11 lines 17-24; col. 12 lines 6-15). This leaves open the question of what to do in the case of a delay at the remote site, which could be caused by numerous factors, including a simple bottleneck. Sicola is deliberately silent on this issue, as it is not within the scope of the

> disclosure (col. 12 lines 64-67, "If the remote copy was unsuccessful for other reasons, then... other error recovery procedures... are invoked.") Thus, there is a glaring need to fill in the blank of how to handle such a condition.

Final Office Action dated October 31, 2005, pp. 3-4

A fundamental notion of patent law is the concept that invention lies in the new combination of old elements. Therefore, a rule that every invention could be rejected as obvious by merely locating each element of the invention in the prior art and formulating an obviousness rejection is inconsistent with the very nature of "invention." Consequently, a rule exists that to establish a *prima facie* case of obviousness must be supported by some teaching, suggestion, or incentive contained in the prior art which would have led one of ordinary skill in the art to make the claimed invention.

The Final Office Action bears the burden of establishing a *prima facie* case of obviousness based on the prior art when rejecting claims under 35 U.S.C. § 103. *In re Fritch*, 972 F.2d 1260, 23 U.S.P.Q.2d 1780 (Fed. Cir. 1992).

Independent claim 1, which is representative of independent claims 15, 29, and 33 with regard to similarly recited subject matter, recites:

> 1. A method for synchronizing transactions comprising:
> specifying a particular level of lag, said particular level of lag being a specified synchronicity setting;
> executing a series of commands at a first computing entity;
> controlling a level of lag between computing entities by relaying the series of commands to a second computing entity until said synchronicity setting is reached; and
> postponing relaying additional commands after said synchronicity setting is reached, wherein the second computing entity lags behind the first computing entity by an amount of lag that is no greater than said specified synchronicity setting.

In comparing **Sicola** to the claimed invention, the claim limitations of the presently claimed invention may not be ignored in an obviousness determination. Claim 1 of the present invention recites the feature of "specifying a particular level of lag, said particular level of lag being a specified synchronicity setting." Such a feature is not taught or suggested by **Sicola**.

Therefore, claim 1 is not obvious in view of **Sicola** because the features believed to be disclosed by this cited reference are not present.

The Final Office Action points to column 11, lines 17 through 24 and column 12, lines 4 through 15, reproduced below, as teaching this feature:

> When system **100** is in asynchronous mode, the remote site may lag behind by a bounded number of write I/O operations. All commands that are returned to the host as completed, are completed on the initiator, and may or may not be completed on the target. From a recovery viewpoint the only difference between the operation modes is the level of currency of target members.

> **FIG. 8A** is a flowchart showing asynchronous operation the present system **100**. Asynchronous operation provides command completion to the host after the data is safe on the initiating controller, and prior to completion of the target command. During system operation, incoming host write requests may exceed the rate at which remote copies to the target can be performed. Copies therefore can be temporarily out of synchronization, but over time that data will converge to the same at all sites. Asynchronous operation is useful when transferring large amounts of data, such as during data center migrations or consolidations.

The above cited passages of **Sicola** do not teach specifying a particular level of lag. The first cited passage of **Sicola**, column 11, lines 17 through 24, teaches a standard definition of the term "asynchronous mode." **Sicola** acknowledges that lag may exist in an asynchronous copy situation; however, **Sicola** does not specify that lag. The Final Office Action states:

> Sicola's synchronous mode of operation provides an obvious remedy that is the same as provided by the claimed invention, namely to wait for acknowledgement of completion from the remote site. It could be said that Sicola inherently discloses this feature, or at the least that it obviously follows from the open-ended teachings of the asynchronous mode of operation. Specifically, Sicola states that "the remote site may lag behind by a bounded number of write I/O operations." (col .11 lines 17-24). Thus, when the number of operations the remote site lags behind the host reaches the bound, it would have been obvious to one having ordinary skill in the art to cease initiation of new operations until at least one completion notification has been received. The discussion presented herein relates to all other independent claims presented in this application, and is hereby incorporated by reference into the rejection of those claims.

Final Office Action dated October 31, 2005, pg. 5

It appears that the Final Office Action is equating the phrase "bounded number of write I/O operations" to a specified synchronicity setting, as recited in the present invention. Appellants submit that the phrase "bounded number of write I/O operations" is not the same as a specified synchronicity setting and that the only way to reach this conclusion is through an impermissible use of hindsight with the benefit of Appellants' invention as a model. **Sicola** does not specifically define what bounded means. However, **Sicola** uses the term "bound' in two other places, column 8, line 65 and column 10, line 66. In both passages the term implies a meaning of connected or grouped. Therefore, one valid interpretation is that the term "bounded number of write I/O operations" means a number of connected or grouped write I/O operations. Thus, **Sicola** is merely stating that the lag could be more than one write I/O operation in length. Furthermore, the write I/O operations could be bound by any number of causes, such as the write/execution speed of the target or the storage capacity of the target, etc. The only way to interpret "bounded number of write I/O operations" as meaning a specified synchronicity setting is through an impermissible of hindsight with the benefit of Appellants' invention as a model.

Acknowledging that lag exists in an asynchronous mode is not the same as specifying a particular level of lag. **Sicola** does not teach specifying a particular level of lag. Furthermore, in column 12, lines 4 through 15, reproduced above, **Sicola** teaches away from the feature of "specifying a particular level of lag, said particular level of lag being a specified synchronicity setting." In the above cited passage, **Sicola** teaches that over time, an asynchronous system will become synchronous, if allowed to operate long enough. Specifically, **Sicola** states "Copies therefore can be <u>temporarily out of synchronization</u>, but over time that <u>data will converge to the same at all sites</u>" (emphasis added). As **Sicola** teaches that lag dissipates over time, **Sicola** cannot teach specifying a level synchronicity for the system to operate at or controlling lag between computers by maintaining a synchronicity setting. Therefore, **Sicola** does not teach or suggest the feature of "specifying a particular level of lag, said particular level of lag being a specified synchronicity setting," as recited in claim 1 of the present invention. Thus, the Final Office Action fails to state a *prima facie* case of obviousness.

Additionally, claim 1 recites the feature of "controlling a level of lag between computing entities by relaying the series of commands to a second computing entity until said synchronicity setting is reached." **Sicola** does not teach or suggest this feature. **Sicola** does not teach

controlling a level of lag. As discussed above, **Sicola** merely acknowledges that lag may exist. **Sicola** does not provide for controlling a level of lag. Because **Sicola** does not teach controlling a level of lag, **Sicola** does not anticipate Appellants' claims.

Further, **Sicola** does not teach controlling a level of lag by relaying commands until the synchronicity setting is reached. Nothing in **Sicola** teaches controlling lag by relaying commands until a synchronicity setting, which is the specified particular level of lag, is reached. The Final Office Action alleges that column 12, lines 47 through 56, of **Sicola**, teaches controlling a level of lag between computing entities by relaying the series of commands to a second computing entity. The Final Office Action alleges that column 11, lines 17 through 24, reproduced above, teaches "until said synchronicity setting is reached." **Sicola**, column 12, lines 47 through 56 states:

> At step **830**, PPRC manager **515** (via host port initiator module **510**) sends the write data to the remote target. Order preserving context is also passed to host port initiator module **510**. At step **835**, remote target controller **B1** (**211**) writes data to its write-back cache (or associated media if a write-through operation). A check is then made by controller **A1** at step **840** to determine whether the remote copy successfully completed. If so, then, at step **845**, target controller **B1** sends the completion status back to initiator controller **A1**.

The above cited passage of **Sicola** does not teach controlling a level of lag between computing entities by relaying the series of commands to a second computing entity. Instead, the above cited passage of **Sicola** merely teaches the normal asynchronous operation of system, wherein controller A1 checks to see if a write operation has been completed by the remote target. The above cited passage does not teach or suggest anything about lag, or controlling a level of lag. The passage only teaches two systems communicating with each other. As discussed above, column 11, lines 17 through 24 does not teach a synchronicity setting or reaching a synchroicity setting. Column 11, lines 17 through 24 merely teaches that lag exists in an asynchronous system. Because **Sicola** does not teach controlling a level of lag by relaying commands until a synchronicity setting is reached, **Sicola** does not anticipate Appellants' claims.

Furthermore, claim 1 recites the feature of "postponing relaying additional commands after the synchronicity setting is reached, wherein the second computing entity lags behind the first computing entity by an amount of lag that is no greater than the specified synchronicity setting." The Final Office Action admits, and Appellants agree, that **Sicola** does not teach

postponing relaying additional commands after the synchronicity setting is reached. However, the Final Office Action states that the feature is an obvious modification to **Sicola**. Appellants respectfully disagree. The Final Office Action states:

> This leaves open the question of what to do in the case of a delay at the remote site, which could be caused by numerous factors, including a simple bottleneck. **Sicola** is deliberately silent on this issue, as it is not within the scope of the disclosure (col. 12 lines 64-67, "If the remote copy was unsuccessful for other reasons, then... other error recovery procedures... are invoked.") Thus, there is a glaring need to fill in the blank of how to handle such a condition.

Final Office Action dated October 31, 2005, page 4

Thus, the Final Office Action is stating that since there is an obvious, glaring problem in the Prior Art that needed to be solved, and the Appellants solved the obvious problem, the Appellants' solution must be obvious. This is not proper logic. Some time after the chariot was invented, it must have become obvious that a way was needed to stop the vehicle besides hoping that the horse would stop. Thus, someone invented the first brake system. However, the invention of the brake was not rendered "obvious" as that term is defined for 35 U.S.C. § 103(a), simply because the need for it was obvious or notorious. Furthermore, **Sicola** points to the fact that the solution arrived at by the present invention is not obvious. In column 11, lines 13 through 14, **Sicola** states that "steady state operation is possible in two modes, synchronous and asynchronous." **Sicola** further states that asynchronous operation is assured of eventual synchronization over time (col. 11, lines 17-24; col. 12, lines 6-15). Neither of these statements points to a solution of imposing constraints upon an asynchronous operation so that it maintains a steady, synchronous state of asynchronization.

Additionally, modern gaming systems today operate in either a synchronous or asynchronous state, depending upon which is best suited for the application, there is no combination of the two. First person shooter type games usually use asynchronous mode because it is not necessary to keep precise track of everything, whereas sports games, like football, often use synchronous mode as it is necessary to keep track of where everyone or everything on the board or field is.

As it appears that the Final Office Action is asserting that the modification would be obvious to one of ordinary skill in the art under M.P.E.P. § 2144.03, Appellants respectfully

challenge this assertion and request that the evidence necessary to show that such a modification would be obvious be provided. Otherwise, the Final Office Action has merely made a modification to **Sicola** without any basis in the prior art and has failed to establish a prima facie case of obviousness.

Therefore, for all the reasons set forth above, Appellants respectfully submit that **Sicola** does not teach or suggest the features of claims 1, 15, 29, and 33. At least by virtue of their dependency on claims 1, 15, 29, and 33 respectively, **Sicola** does not teach or suggests the features of dependent claims 2 – 14, 16 – 28, 30 - 32, and 34 - 42. Accordingly, Appellants respectfully request the withdrawal of the rejection of claims 1-42 under 35 U.S.C. § 103(a).

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CLAIMS APPENDIX

The text of the claims involved in the appeal are:

1. A method for synchronizing transactions comprising:

specifying a particular level of lag, said particular level of lag being a specified synchronicity setting;

executing a series of commands at a first computing entity;

controlling a level of lag between computing entities by relaying the series of commands to a second computing entity until said synchronicity setting is reached; and

postponing relaying additional commands after said synchronicity setting is reached, wherein the second computing entity lags behind the first computing entity by an amount of lag that is no greater than said specified synchronicity setting.

2. The method of claim 1, wherein the first computing entity is a computer peripheral.

3. The method of claim 2, wherein the computer peripheral is a storage system.

4. The method of claim 1, wherein the first computing entity is a computer.

5. The method of claim 1, wherein the first computing entity is a computer program.

6. The method of claim 1, wherein the amount of lag and the specified synchronicity setting are measured as numbers of commands executed.

7. The method of claim 1, wherein the amount of lag and the specified synchronicity setting are measured as amounts of time.

8. The method of claim 1, wherein the amount of lag and the specified synchronicity setting are measured as amounts of data.

9. The method of claim 1, wherein the amount of lag and the specified synchronicity setting are measured as numbers of devices with outstanding commands to execute.

10. The method of claim 1, wherein the second computing entity is a computer peripheral.

11. The method of claim 10, wherein the computer peripheral is a storage system.

12. The method of claim 1, wherein the second computing entity is a computer.

13. The method of claim 1, wherein the second computing entity is a computer program.

14. The method of claim 1, wherein the series of commands is for a peer-to-peer remote copy operation.

15. A computer program product in a computer-readable medium comprising functional descriptive data that, when executed by a computer, enables the computer to perform acts including:

specifying a particular level of lag, said particular level of lag being a specified synchronicity setting;

executing a series of commands at a first computing entity;

controlling a level of lag between computing entities by relaying the series of commands to a second computing entity until said synchronicity setting is reached; and

postponing relaying additional commands after said synchronicity setting is reached, wherein the second computing entity lags behind the first computing entity by an amount of lag that is no greater than said specified synchronicity setting.

16. The computer program product of claim 15, wherein the first computing entity is a computer peripheral.

17. The computer program product of claim 16, wherein the computer peripheral is a storage system.

18. The computer program product of claim 15, wherein the first computing entity is the computer.

19. The computer program product of claim 15, wherein the first computing entity is a computer program.

20. The computer program product of claim 15, wherein the amount of lag and the specified synchronicity setting are measured as numbers of commands executed.

21. The computer program product of claim 15, wherein the amount of lag and the specified synchronicity setting are measured as amounts of time.

22. The computer program product of claim 15, wherein the amount of lag and the specified synchronicity setting are measured as amounts of data.

23. The computer program product of claim 15, wherein the amount of lag and the specified synchronicity setting are measured as numbers of devices with outstanding commands to execute.

24. The computer program product of claim 15, wherein the second computing entity is a computer peripheral.

25. The computer program product of claim 24, wherein the computer peripheral is a storage system.

26. The computer program product of claim 15, wherein the second computing entity is a computer.

27. The computer program product of claim 15, wherein the second computing entity is a computer program.

28. The computer program product of claim 15, wherein the series of commands is for a peer-to-peer remote copy operation.

29. A computer program product in a computer-readable medium comprising functional descriptive data that, when executed by a computer, enables the computer to perform acts including:

specifying a particular level of lag, said particular level of lag being a specified synchronicity setting;

copying extents of data from a host to a first storage system pursuant to instructions from the host;

controlling a level of lag between storage systems by relaying the instructions to a second storage system until said synchronicity setting is reached; and

postponing relaying additional commands after said synchronicity setting is reached, wherein, the second storage system lags behind the first storage system in copying the extents of data by an amount of lag that is no greater than said specified synchronicity setting.

30. The computer program product of claim 29, wherein the amount of lag and the specified synchronicity setting are measured as numbers of instructions executed.

31. The computer program product of claim 29, wherein the amount of lag and the specified synchronicity setting are measured as amounts of time.

32. The computer program product of claim 29, wherein the amount of lag and the specified synchronicity setting are measured as amounts of data.

33. A data processing system comprising:

a processing unit including at least one processor;

memory; and

a set of instructions within the memory,

wherein the processing unit executes the set of instructions to perform acts including:

specifying a particular level of lag, said particular level of lag being a specified synchronicity setting;

executing a series of commands;

controlling a level of lag between computing entities by relaying the series of commands to a second computing entity until said synchronicity setting is reached; and

postponing relaying additional commands after said synchronicity setting is reached, wherein the second computing entity lags behind the data processing system by an amount of lag that is no greater than said specified synchronicity setting.

34. The data processing system of claim 33, wherein the amount of lag and the specified synchronicity setting are measured as numbers of commands executed.

35. The data processing system of claim 33, wherein the amount of lag and the specified synchronicity setting are measured as amounts of time.

36. The data processing system of claim 33, wherein the amount of lag and the specified synchronicity setting are measured as amounts of data.

37. The data processing system of claim 33, wherein the amount of lag and the specified synchronicity setting are measured as numbers of devices with outstanding commands to execute.

38. The data processing system of claim 33, wherein the second computing entity is a computer peripheral.

39. The data processing system of claim 38, wherein the computer peripheral is a storage system.

40. The data processing system of claim 33, wherein the second computing entity is a computer.

41. The data processing system of claim 33, wherein the second computing entity is a computer program.

42. The data processing system of claim 33, wherein the series of commands is for a peer-to-peer remote copy operation.

EVIDENCE APPENDIX

There is no evidence to be presented.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.